DOSSIER: ASIA

Farmers are partners in research

Gordon Banta

An agronomist, an economist, and two farmers are standing in a rice field discussing what crop should be planted after the rice is harvested. The scene is typical of multiple cropping research today, as interdisciplinary research teams are moving out of research stations and into the farmers' fields to test and develop technology in the environment where it will be used.

The farmer thus becomes a partner in the research. Because he supplies the land and a major part of the labour, he may reject any idea that he feels will not help him.

The basic idea that separates cropping systems research from traditional agricultural research is that the farm is viewed as a total system. The emphasis is on crops, but the interactions with animal and household activities are taken into account — interactions that are impossible to duplicate on a research station. The goal is to make more efficient use of the farmer's total resources. This is usually achieved by growing additional crops, and by increasing the yield of existing crops.

In Southeast Asia over 80 percent of the farmers have less than three hectares of land. Rice is the predominant crop, and about 70 percent is grown under rainfed conditions, usually only one crop a year.

Northeast Thailand is a good example of a region where cropping systems research has potential. In a study of the region the Division of Agricultural Economics found that only 40 percent of agricultural labour was utilized in the wet season, while 13 percent of the fields were left unplanted.

In the current crop year peanuts, mungbean, maize and yard-long bean were grown successfully before rice. Then the rains failed, and several cooperator farmers lost most of their traditionally grown rice because they waited to puddle the land and transplant. By direct seeding, however, a second rice crop was produced after the first upland crop was harvested, this in a region that had been declared a disaster area by the government of Thailand.

It is expected that with varieties more suited to the local soil and rainfall patterns, most of Northeast Thailand could produce two crops per year, with a few areas having longer duration rainfall producing three crops in a good year.

It is in the area of better varieties, management and other technology that cropping systems research can have a major impact. Researchers working in the farm environment are able to feed back to central research institutions specific problems. If no solution to the problem is known, the specialist then has a new research project which he knows will have immediate impact on the farmers' ability to increase their well being.

Since only a few farmers are directly involved in the research, neighbouring farmers are watched to see if they adopt a new cropping pattern, and if so what modifications they make to it. Once this stage is reached, a workable package is available for extension.

Cropping systems work started at IRRI (the International Rice Research Institute) in 1968, and has received continuous support from IDRC since 1970. Today IRRI's cropping systems work is so widely accepted that there is an Asian Cropping Systems Network, comprising Bangladesh, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, and Thailand. People working directly in national programs meet every six months to compare results and discuss problems. Burma is also starting a program, and may join the network. South Korea, with its temperate climate, faces different problems, but nevertheless attends the meetings — research methodology can still be exchanged.

Each country in the network has a different set of problems, and the cropping systems programs at first seem quite different. In Indonesia one group is working on cropping patterns suited to new land in the transmigration areas. Sri Lanka has a team working on reviving rice production below the old tanks in the dry zone. Bangladesh is concerned with getting an extra crop in the deep water rice areas. Thailand is trying to get a second crop either before or after the rainfed rice crop on soils of very low fertility.

Each program is established by the national government to meet their specific needs and goals, yet in all these examples there is a common methodology which scientists share with other country programs. The Asian Cropping Systems Network is a good example of an Asian program, operated by Asians to solve Asian problems. □

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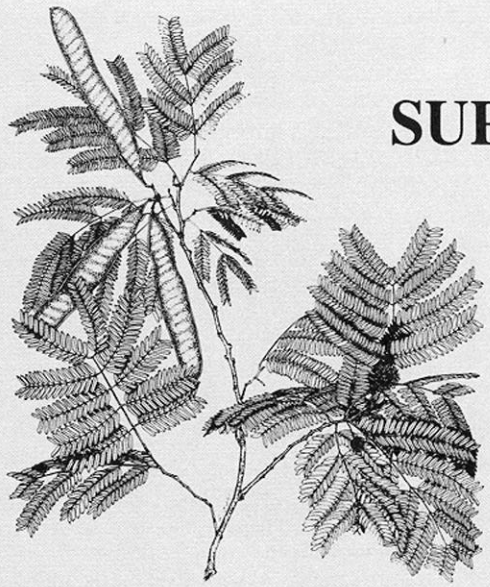

SUP

A tree that grows very rapidly, provides nutritious forage for animals, and yields firewood, timber, and fertilizer abundantly seems scarcely less than miraculous. The tree is leucaena (also known as leadtree, ipil-ipil, and koa haole), and although scientists are not prone to endorsing miracles, they do regard the potential of this tropical leguminous tree as "promising".*

The IDRC is supporting the Philippine Council for Agriculture and Resources Research (PCARR) in a project to develop the economic potential of leucaena for small landholders in the tropics.

In the Philippines, leucaena plantations have annually produced more wood than any other species now known. The tree leucaena resprouts vigorously from stumps, and can be harvested again in five to six years. The wood properties make it suitable for pulp and paper, and the manufacture of rayon and cellophane. The wood is strong, dense, and attractive, and has machining properties comparable to hardwoods used for commercial lumber and plywood. For the rural smallholder, leucaena can provide a ready source of roundwood for fence posts, rafters and joists for small buildings, and props for climbing and hanging crops after only two years.

Because the tree grows rapidly, yields well and will survive many cuttings, it may be ideal for firewood plantations or woodlots. Over half of all timber cut in the world is used for cooking or heating, and demand is rapidly outstripping supplies of traditional woods. Leucaena has an uncommonly high density and calorific value — good burning properties — and should be able to provide a reliable energy source for cooking, heating, and small industry. It may also supply the rural smallholder with additional income and employment oppor-

*The US National Academy of Sciences has recently published *Leucaena: promising forage and tree crop for the tropics*, available from the Commission on International Relations (JH 215), NAS/NRC, 2101 Constitution Avenue, Washington DC 20418, USA.